

111.2 - Ores (powder form)

PLEASE NOTE: The tables are presented to facilitate comparisons among a family of materials to help customers select the best SRM for their needs. For specific values and uncertainties, the certificate is the only official source.

SRM Description	25d	69b	120c	180	182	183	277	330a	331a	423	600	670	690	691	692	693	694	696	697	698
Unit Size	Manganese Ore (60 g)	Bauxite (Arkansas) (60 g)	Phosphate Rock (Florida) (90 g)	High Grade-Fluorspar (120 g)	Lithium Ore (Petalite) (45 g)	Lithium Ore (Lepidolite) (45 g)	Tungsten Concentrate (1 bottle x 100 g)	Copper Ore Mill Heads (1 bottle x 90 g)	Copper Ore Mill Tails (40 g)	Molybdenum Oxide Concentrate (Powder Form) (1 pouch x 50 g)	Australian-Darling Range (90 g)	Rutile Ore (90 g)	Iron Ore Concentrate (Canada) (100 g)	Reduced Iron Oxide (100 g)	Iron Ore (Labrador) (100 g)	Iron Ore (Nimba) (100 g)	Phosphate Rock, Western Surinam (90 g)	Bauxite, Dominican (60 g)	Bauxite, Jamaican (60 g)	

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111.2(1)- Ores (powder form)

SRM Description	25d Manganese Ore (60 g)	180 High Grade-Fluorspar (120 g)	182 Lithium Ore (Petalite) (45 g)	183 Lithium Ore (Lepidolite) (45 g)	277 Tungsten Concentrate (1 bottle x 100 g)	330a Copper Ore Mill Heads (1 bottle x 90 g)	331a Copper Ore Mill Tails (40 g)	423 Molybdenum Oxide Concentrate (Powder Form) (1 pouch x 50 g)
Unit Size								

(Concentrations are in mass fractions, in %, unless noted by an asterik for mg/kg.)

Aluminum (Al)		7.053	7.92	
Aluminum oxide (Al_2O_3)	5.33			
Antimony (Sb)		(<0.01)		(0.0024)
Arsenic (As)		0.0120		
Barium (Ba)			0.156	259*
Barium oxide (BaO)	(0.21)			
Bismuth (Bi)		(0.05)		(0.006)
Cadmium (Cd)			3.391*	(0.1)
Calcium (Ca)		0.38	0.323	1.552
Calcium fluoride (CaF_2)	98.80			
Calcium oxide (CaO)	(0.052)			
Carbon (C)			565*	(0.025)
Cerium (Ce)		22.32*	9.6*	
Chromium (Cr)			77.0*	13.9* (0.0034)
Cobalt (Co)		4.542*	12.6*	

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Copper (Cu)		(0.014)	0.845	789*	0.0640
Gallium (Ga)			17.4*	16.3*	
Gold (Au)				0.121*	
Iron (Fe)		7.47	1.06	4.207	1.708
Iron oxide (Fe_2O_3)	3.91				
Lead (Pb)		0.0676	(27*)	(6)	0.0433
Lithium (Li)			22.19*	(3*)	
Lithium oxide (Li_2O)	4.34	4.12			
Magnesium (Mg)			0.868	1.623	(0.10)
Manganese (Mn)	51.78		10.2	497*	(0.009)
Mercury (Hg)				0.00184*	
Moisture (1)					
Molybdenum (Mo)		0.0598	(4.5*)	3.2*	58.61
Nickel (Ni)			28.95*	8.1*	
Niobium (Nb)		1.018	(5.7*)		
Oxygen, available (O_2)	14.283		22.0		

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Phosphorus (P)		0.034	(326*)	(550)	
Phosphorus pentoxide (P_2O_5)	0.251				
Potassium (K)			5.47	0.967	
Potassium oxide (K_2O)	0.928				
Rhenium (Re)				(0.004)	
Scandium (Sc)			5.693*	11.4*	
Silicon (Si)		0.842	33.4		
Silicon dioxide (SiO_2)	2.54				
Silver (Ag)				(0.0029)	
Sodium (Na)			0.657	3.15	(0.2)
Strontrium (Sr)			218.1*		
Sulfur (S)		0.2668		870*	(0.063)
Tantalum (Ta)		(0.14)			
Thorium (Th)			(7.6*)		
Tin (Sn)		0.53			
Titanium (Ti)		2.20	(1223*)	0.228	

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Titanium dioxide (TiO_2)	0.136				
Tungsten trioxide (WO_3)		67.50			
Vanadium (V)			(43*)	121*	(0.0023)
Yttrium (Y)			20.01*		
Zinc (Zn)			94.9*	71.8*	(0.017)
Zirconium (Zr)		(<0.8)		80.5*	

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111.2(2)- Ores (powder form)

SRM Description	670 Rutile Ore (90 g)	690 Iron Ore Concentrate (Canada) (100 g)	691 Reduced Iron Oxide (100 g)	692 Iron Ore (Labrador) (100 g)	693 Iron Ore (Nimba) (100 g)	886 Refractory Gold Ore (200 g)	1835 Borate Ore (60 g)	2430 Scheelite Ore (100 g)
Unit Size								

(Concentrations are in mass fractions, in %, unless noted by an asterik for mg/kg.)

Aluminum (Al)								
Aluminum oxide (Al_2O_3)	0.175	1.215	1.428	1.043	3.474	(0.4)		
Antimony (Sb)						(<0.005)		
Arsenic (As)		(0.0014)	0.0045	0.0012		0.0022		
Barium oxide (BaO)						0.0497		
Bismuth (Bi)						0.080		
Boron oxide (B_2O_3)						18.739		
Cadmium (Cd)		(<0.0005)						
Calcium oxide (CaO)	0.2004	0.640	0.0224	0.0158	21.622	19.44		
Carbon (C)		0.12			(5.7)			
Chromium (Cr)	0.0030	0.0256	0.0019	0.0048				
Chromium oxide (Cr_2O_3)	0.23							
Cobalt (Co)		0.0317	0.0010					
Copper (Cu)		0.0309	0.0045			0.0086		
Fluorine (F)					0.348	1.3		

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Gold (Au)						8.25*		
Iron (Fe)	66.87	84.73	59.61	65.08		1.13		
Iron oxide (Fe_2O_3)	0.86					1.141		
Lead (Pb)		(<0.002)				25.724		
Loss on Ignition-See certificate for conditions								
Magnesium (Mg)						(0.5)		
Magnesium oxide (MgO)	0.1778	0.517	0.0361	0.0143	3.411			
Manganese (Mn)						0.1178		
Manganese oxide (MnO)	0.2306	0.0428	0.4580	0.0900	0.0333			
Molybdenum (Mo)		(<0.002)				0.22		
Nickel (Ni)		0.269	0.0007	0.0009				
Niobium (Nb)			0.0007			(<0.02)		
Nitrogen (N)		(0.005)						
Phosphorus (P)	0.0098	0.0052	0.0387	0.0563		(0.02)		
Potassium (K)		0.0656				1.261	0.179	
Potassium oxide (K_2O)	0.00303		0.0399	0.00283				

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Silicon (Si)						1.74		
Silicon dioxide (SiO_2)	0.51	3.700	3.66	10.177	3.860	18.408		
Sodium (Na)						0.018		
Sodium oxide (Na_2O)		0.00274	0.1775	0.0077	0.0023	3.484		
Strontium oxide (SrO)						0.9418		
Sulfur (S)	0.004	0.009	0.005	0.005	1.466	0.25		
Sulfur trioxide (SO_3)						1.477		
Tantalum (Ta)						(0.06)		
Tin (Sn)		(<0.001)						
Titanium dioxide (TiO_2)	96.16	0.0217	0.275	0.0449	0.0345	0.1332		
Tungsten (W)			0.059					
Tungsten trioxide (WO_3)						70.30		
Vanadium (V)		0.0045	0.0154	0.0049	0.0043			
Vanadium pentoxide (V_2O_5)	0.66							
Zinc (Zn)		(0.004)						
Zirconium (Zr)		0.0015	0.0026	0.0009				

(Concentrations are in mass fractions, in %, unless noted by an asterik for mg/kg.)

Zirconium dioxide (ZrO_2)	0.84							
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111.2(3)- Ores (powder form) Phosphate Rocks and Bauxites

SRM Description	69b Bauxite (Arkansas) (60 g)	120c Phosphate Rock (Florida) (90 g)	600 Bauxite, Australian-Darling Range (90 g)	694 Phosphate Rock, Western (90 g)	696 Bauxite, Surinam (60 g)	697 Bauxite, Dominican (60 g)	698 Bauxite, Jamaican (60 g)
(Concentrations are in mass fractions, in %.)							
Aluminum oxide (Al_2O_3)	48.8	1.30	40.0	1.8	54.5 (0.004)	45.8 (0.015)	48.2 (0.008)
Barium oxide (BaO)	(0.008)						
Beryllium (Be)							
Cadmium oxide (CdO)	0.0010			0.015			
Calcium oxide (CaO)	0.13	48.02	0.22	43.6	0.018	0.71	0.62
Carbon dioxide (CO_2)		3.27					
Cerium (Ce)	(0.024)				(0.0041)	(0.069)	(0.030)
Chromium oxide (Cr_2O_3)	0.011		0.024	(0.10)	0.047	0.100	0.080
Cobalt (Co)	(0.0001)				(0.00009)	(0.0013)	(0.0045)
Fluorine (F)		3.82		3.2			
Gallium oxide (Ga_2O_3)							
Iron oxide (Fe_2O_3)	7.14	1.08	17.0	0.79	8.70	20.0	19.6
Lithium oxide (Li_2O)							
Loss on Ignition-See certificate for conditions	27.2		20.5		29.9	22.1	27.3
Magnesium oxide (MgO)	0.085	0.32	0.05	0.33	0.012	0.18	0.058
(Concentrations are in mass fractions, in %.)							
Manganese oxide (MnO)	0.110	0.027	0.013	0.0116	0.004	0.41	0.38
Phosphorus pentoxide (P_2O_5)	0.118	33.34	0.039	30.2	0.050	0.97	0.37
Potassium oxide (K_2O)	0.068	0.147	0.23	0.51	0.009	0.062	0.010
Silicon dioxide (SiO_2)	13.43	5.5	20.3	11.2	3.79	6.81	0.69
Sodium oxide (Na_2O)	(0.025)	0.52	0.022	0.86	(0.007)	(0.036)	(0.015)
Sulfur trioxide (SO_3)	0.551		0.155		0.150	0.0770	0.143
Titanium dioxide (TiO_2)	1.90	0.103	1.31	(0.11)	2.64	2.52	2.38
Uranium (U)			0.01414				
Uranium Oxide (U_3O_8)		0.0135					
Vanadium pentoxide (V_2O_5)	0.028	0.016	0.060	0.31	0.072	0.063	0.064
Zinc oxide (ZnO)	0.0035		0.003	(0.19)	0.0014	0.037	0.029
Zirconium dioxide (ZrO_2)	0.29		0.060		0.14	0.065	0.061

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